

IOWA HIGHWAY PROGRAM,
FINANCES AND PROGRESS.

Compiled By

Iowa State Highway Commission

November 3, 1954.

Highlights.

(a) Iowa has a total of 101,451 miles of rural roads, both primary and secondary.

(b) On January 1, 1954, a total of 77,024 miles of these rural roads were surfaced - mostly with gravel and crushed stone. This is 5,531 miles greater than on January 1, 1952.

(c) Additional roads are being surfaced at the rate of 2766 miles per year.

(d) Iowa's highway program provides for a surfaced road to every reasonably located rural home and a paved or other type of dustless surface on all primary roads.

(e) Iowa's highway funds come

25.4 per cent from property taxes and special taxes.....	\$29,708,546.67
63.7 per cent from road use taxes.....	74,581,080.30
10.6 per cent from Federal Aid(1952 Act)	12,424,000.00
0.3 per cent from miscellaneous receipts	287,922.86
<hr/> 100.0	<hr/> \$117,001,549.83

(f) Annual income under present laws, available for highway construction, is approximately,

For primary roads\$29,420,000.00

For secondary roads 44,328,000.00

In 1953, \$7,299,000 of secondary road construction funds was transferred to the maintenance fund.

(g) Iowa's highway improvements are being paid for as built. No new bonds are being issued.

Mileage of Rural Roads.

Iowa has a total of 101,451 miles of rural roads. Only seven states have a larger mileage of rural road.

Classification of Rural Roads.

All rural roads in Iowa are by law classified into

Primary or State Roads.....8,673 Miles
 Secondary (or County) Roads.....92,778 "
 Total101,451 "

Jurisdiction over Rural Roads.

The primary roads are under the control and jurisdiction of the State Highway Commission. The secondary roads in each county are under the control and jurisdiction of the board of supervisors of that county. We have no "township roads". The county is our smallest road administrative unit.

Secondary Roads Subdivided.

The 92,778 miles of secondary roads in Iowa are subdivided into

Farm to Market Roads34,159 Miles
 Local Secondary Roads.....58,619 "
 Total92,778 "

Condition of Rural Roads.

The condition of the rural roads in Iowa on January 1, 1952, and January 1, 1954 is given below:

a. Primary Roads

	January 1, 1952	January 1, 1954	Differ- ence
Paved*	5,832 Mi.	5,990 Mi.	+158 Mi.
Bituminous Surfaced	948 "	1,006 "	+ 58 "
Gravel or stone	1,870 "	1,649 "	-221 "
Unsurfaced	24 "	28 "	4 "
Total	8,674 "	8,673 "	- 1 "

*Includes approximately 600 miles resurfaced with asphaltic concrete.

b. Secondary Roads

	January 1, 1952	Jan. 1, 1954	Differ- ence
Farm to Market Roads.			
Paved	33 Mi.	47 Mi.	+ 14 Mi.
Bituminous	389 "	763 "	+374 "
Gravel or stone	29,445 "	30,482 "	+1037 "
Unsurfaced	4,330 "	2,867 "	-1463 "
Total	34,197 Mi.	34,159 Mi.	- 38Mi.
Local Secondary Roads.			
Paved	41 Mi.	56 Mi.	+ 15 Mi.
Bituminous	42 "	66 "	+ 24 "
Gravel or stone	32,893 "	36,965 "	+4072 "
Unsurfaced	25,781 "	21,532 "	-4249 "
Total	58,757 Mi.	58,619 Mi.	- 138 Mi.
All Secondary Roads.			
Paved	74 Mi.	103 Mi.	+ 29 Mi.
Bituminous	431 "	829 "	+ 398 "
Gravel or Stone	62,338 "	67,447 "	+5109 "
Unsurfaced	30,111 "	24,399 "	-5712 "
Total	92,954 Mi.	92,778 Mi.	- 176 Mi.

c. Summary Condition of All Rural Roads.

Paved	5,906 Mi.	6,093 Mi.	+ 187 Mi.
Bituminous (Blacktop)	1,379 "	1,835 "	+ 456 "
Gravel or Stone	64,208 "	69,096 "	+4888 "
Unsurfaced	30,135 "	24,427 "	-5708 "
Total	101,628 Mi.	101,451 "	- 177 Mi.

Urban Streets.

In addition to rural roads, Iowa has 10,217 miles of urban roads and streets; 1056.6 miles of this 10,217 miles constitute extensions of primary routes in cities and towns and are maintained and improved with primary road funds under State control.

Iowa's Highway Program.

Iowa's highway program, as set forth in pages 54-55 of the report of November 15, 1948 by the Highway Investigation Committee created by the 52nd General Assembly is as follows:

"A. Primary Roads.

- (1) Complete initial construction of the Primary road system, including its extensions within municipalities. This involves the construction of a dustless surface on all roads not now so improved, together with such grading and bridge and culvert work as is incidental thereto.
- (2) Widen or reconstruct entirely, as conditions may require, all existing pavements, bridges, culverts, and earth shoulders, where such facilities do not now serve today's traffic satisfactorily.
- (3) Resurface pavements as the need develops, for protecting original investments and providing satisfactory service to traffic.

It will be noted that the statement of objectives for the primary road program makes no mention of any multiple-lane highways, with access limited to occasional predetermined locations. There are only a relatively few miles of rural highways in Iowa that serve enough traffic to justify the construction of more than a good two-lane highway. The planning and financing of an extensive mileage of multiple-lane highways must await the development of an actual need for such facilities.

B. Secondary Roads.

- (1) Extend all-weather road service to every reasonably located rural home.
- (2) Surface all roads that are necessarily used as school bus and rural mail routes.
- (3) Reconstruct existing surfaced roads where grades or alignments are such that satisfactory service cannot be given at reasonable maintenance costs.
- (4) Conserve surfacing materials, reduce traffic hazards, and improve highway service, by constructing dust-free surfaces on the most heavily traveled sections of the secondary road system. "

This highway program was accepted by the 53rd General Assembly. The Highway Commission, on November 3, 1954, has no suggested change to be made in this program.

Average Cost Per Mile for Highway Construction and Reconstruction.

During the past two years, the average cost per mile for highway construction and reconstruction is as follows:

On Primary Roads

(a) For building new Portland cement paved primary roads.

Right of Way	\$ 6,106.00	Per mile
Grading.....	19,233.00	" "
Bridges.....	12,430.00	" "
Culverts	7,519.00	" "
Paving	56,755.00	" "
Detours.....	280.00	" "
Miscellaneous	1,685.00	" "
Total	\$104,008.00	" "

(b) For regrading, widening and resurfacing paved primary roads.

Right of Way	\$ 6,582.00	per mile
Grading	16,245.00	" "
Bridges	8,079.00	" "
Culverts	7,450.00	" "
Paving	65,388.00	" "
Detours	916.00	" "
Miscellaneous	576.00	" "
Total	\$105,236.00	" "

(c) For grading, bridges, culverts, stabilized base and bituminous surface.

Right of Way	\$ 2,542.00	per mile
Grading	11,531.00	" "
Bridges	4,912.00	" "
Culverts	3,246.00	" "
Stabilized Base	29,989.00	" "
Temporary surfacing	151.00	" "
Miscellaneous	2,492.00	" "
Total	\$ 54,863.00	" "

- (d) For hot-mix asphaltic concrete resurfacing of old concrete pavements without widening.

Asphalt concrete resurfacing of		
18 to 20-foot wide pavement.....	\$ 15,185.00	per mi.
Reshaping and surfacing shoulders	864.00	" "
Total	\$ 16,049.00	" "

On Farm to Market Roads

	1952 Report Per mile	For last 2 years. Per mile
Grading and small circular culverts	\$6,954.00	\$5,485.00
Bridges and culverts other than small circular culverts	4,050.00	3,948.00
Gravel or crushed stone surfacing....	2,556.00	2,491.00
Total	\$13,560.00	\$11,924.00

Sources of Highway Funds.

There are two general state and local sources of revenue for highway construction and maintenance in Iowa,

- a. Property Taxes
- b. Road Use Taxes

The highway funds derived from property taxes are expended only on secondary roads. Road use tax funds are expended in part on primary roads and in part on secondary roads.

The laws authorize the county board of supervisors of each county to levy certain millage taxes on the property in the county. It is within the discretion of the county board as to how much of the authorized millage is actually levied in any year.

The road use tax fund consists of and includes the net proceeds of

- a. Motor vehicle registration fees,
- b. Motor vehicle fuel (gasoline) tax,
- c. Motor vehicle carrier tax,
- d. Use tax on new motor vehicles and trailers,
- e. Ten per cent of the 2.0% sales tax.

Highway Income Per Year from State and Local Sources.

The income per year from state and local sources for primary roads, primary road extensions, and secondary roads, under present law, is approximately as follows:

- a. From property taxes, for calendar year ending December 31, 1953.....\$29,708,500
- b. From road use tax fund and the addition-74,581,100 at 1-cent gas tax authorized by 55th GA
- c. Total from State and Local sources...\$104,289,600

Income in Road Use Tax Fund and the One-Cent Additional Gasoline Tax.

The income in the road use tax fund for the two fiscal years ending in 1953 and 1954, as certified by the Treasurer of State, was as follows:

Source of Funds	:Fiscal Year :Ended 6-30-53	:Fiscal Year :Ended 6-30-54
Motor Vehicle Fuel Tax	:\$30,827,701.14	:\$32,601,853.65
Motor Vehicle Fuel Tax 1¢ (55th G.A.) :		: 7,277,969.96
Motor Vehicle Registration Fees	: 28,138,517.67	: 29,315,098.33
Sales Tax (10%)	: 5,318,683.74	: 5,362,896.83
Use Tax on Motor Vehicles and Trailers	: 5,034,975.83	: 5,715,125.26
Motor Carrier Tax	: 172,583.79	: 160,580.65
Miscellaneous	: -	: -
Total	:\$69,492,462.17	:\$80,433,524.68

Allocation of Road Use Tax Fund to Various Road Funds.

The income in the road use tax fund during the year July 1, 1953 to June 30, 1954 was by law allocated to the various road funds as follows:

Primary Road Fund (1¢ gas tax 55th GA)	\$	7,277,969.86
Primary Road Fund.....	42.0%.....	30,725,332.98
Secondary roads (Counties)....	35.0%.....	25,604,444.16
Farm to Market Road Fund.....	15.0%.....	10,973,333.20
Cities and Towns.....	8.0%.....	5,852,444.38
Total		\$80,433,524.68

Approximate Allotment of Federal Aid Road Funds to Iowa.

System	Act of 1952	Act of 1954	Increase
Federal Aid Primary	\$5,914,000	\$7,626,000	\$1,712,000
Federal Aid Urban	1,581,000	2,054,000	473,000
Interstate System	604,000	3,546,000	2,942,000
Subtotal	\$8,099,000	\$13,226,	\$5,127,000

Federal Aid Second-ary	4,325,000	5,581,000	1,256,000
Total	\$12,424,000	\$18,807,000	\$6,383,000

Total Highway Income Per Year.

From the above data, the total income per year for primary and secondary roads is determined as follows:

From property taxes.....	\$29,708,500
From road use taxes	74,581,100
From Federal aid	12,424,000
Total per year.....	\$116,713,600

Increase in Traffic on Primary Roads.

Traffic on primary roads decreased during World War II to about 60.0% of prewar (1941) traffic. When, at the end of the war, restrictions on highway traffic were lifted, in October 1945, there was an immediate traffic increase. The 1946 primary road traffic was slightly less than 1941 traffic. In 1948 the Highway Investigation Committee estimated that primary road traffic would increase 33.0% from 1947 to 1960. This estimate has now been exceeded by 10.5%. The average daily traffic in 1953 on primary roads, was 43.5% greater than in 1947. Actual counts were made in 1949 and 1953; the other three years were estimated. The increase of 1953 traffic over 1949 traffic was 17.8%

Since 1947 the increase in primary road traffic has been as follows:

Year	: Total Average Annual : Daily Traffic Per : Mile of Primary Road, : Vehicles	: Percent Increase : Over 1947	: Percent In- : crease over : Previous : Year
1941	: 917.0	: -	: -
1947	: 959.1	: -	: -
1948	: 1052.1	: 9.7%	: 9.70%
1949	: 1168.2	: 21.8%	: 11.10%
1950	: 1201.2	: 25.9%	: 2.82%
1951	: 1242.0	: 29.5%	: 3.40%
1952	: 1267.8	: 32.2%	: 2.08%
1953	: 1376.4	: 43.5%	: 8.56%

or an average of 4.45% per year.

Division of Funds Among Road Systems.

This total income is divided between primary roads and secondary roads:

a. Primary roads for both construction and maintenance.

1¢ additional gas tax.....	\$7,277,970
Road Use Tax	30,725,333
Federal Aid	8,099,000
Miscellaneous Items	212,730
Total to Primary Roads.....	\$46,315,033

b. Secondary Roads for Construction.

On Farm to Market Roads

Road Use Tax.....	\$10,973,333
Federal Aid	4,325,000
Miscellaneous receipts...	75,193
	\$15,373,526

On All Secondary Roads

Special Assessments.....	\$ 421,497
Property Tax.....	3,003,925
Road Use Tax.....	25,604,444
	\$29,029,866

Maintenance on All Secondary Roads

Property Tax.....	\$26,283,125
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c. Total for all Rural Roads.....\$ 117,001,550

Allotment of Farm to Market Road Fund Among Counties.

All of the annual Federal Aid Secondary road funds allotted to Iowa, and 60.0% of the approximately \$10,973,333 of farm to market road funds per year which come from the state road use tax fund, are allotted among the counties on the basis of area.

Forty percent of that part of the farm to market road fund income which comes from the state road use tax fund is, under Section 308A.5, Code 1950, credited to

the equalization farm to market road fund and allotted among the counties by the State Highway Commission so as to equalize the condition of farm to market road improvement in all parts of the state in so far as possible. Thus about 71.3% of the farm to market road fund is allotted among the counties on the area basis. The remaining about 28.7% of the farm to market road fund is allotted among the counties on an equalization basis.

Allotment of Equalization Farm to Market Road Funds
Among the Counties.

The equalization farm to market road fund income for the fiscal year July 1, 1953 to June 30, 1954 was allotted among the counties as shown in Pages 22 to 28 incl. These equalization farm to market road funds were allotted among the counties on two factors:

- "(a) The estimated cost of blade grading and surfacing those farm to market roads in each county which were not surfaced on January 1, 1950.
- (b) The equalization of secondary road fund income in the various counties per square mile of area in so far as available equalization funds will permit.

Adjustments involving a little over seven per cent of the funds, are made in the allotments computed on these two factors to eliminate apparent inconsistencies in some of the counties."

The Secondary Road Department is now making a state-wide survey to estimate the cost of bringing all the system to a uniform bridged, graded, and gravel surfaced condition. It is expected that the data contained in their survey will be used as one of the factors in allotting equalization funds in the future.

Amount of Highway Construction Contracts Let Since World War II.

The amounts of highway construction contracts let by or under the State Highway Commission each year since the close of World War II are as follows:

Fiscal Year or Part of Year	Primary Roads	Farm to Market Roads	Total
10-30-45 to 6-30-46	\$ 8,638,518.10	\$ 2,327,213.10	\$10,965,731.20
7-1-46 to 6-30-47	8,433,920.51	4,817,434.08	13,251,354.59
7-1-47 to 6-30-48	12,759,517.18	5,969,005.86	18,728,523.04
7-1-48 to 6-30-49	11,548,334.95	11,272,021.18	22,820,356.13
7-1-49 to 6-30-50	16,041,925.55	15,610,946.68	31,652,872.23
7-1-50 to 6-30-51	28,085,175.89	20,912,134.10	48,997,309.99
7-1-51 to 6-30-52	28,642,718.96	18,526,719.68	47,169,438.64
7-1-52 to 6-30-53	11,352,669.16	12,775,513.58	24,128,182.74
7-1-53 to 6-30-54	30,286,342.03	11,736,048.51	42,022,390.54
Totals	\$155,789,122.33	\$103,947,036.77	\$259,736,159.10

See Charts . Page 29 and . Page 30

Increase in Mileage of Surfaced Secondary Roads.

On January 1, 1948 the mileage of surfaced secondary road was,

On farm to market roads.....25,466 Miles
On local secondary roads.....26,730 "
Total52,196 "

On January 1, 1954 the mileage of surfaced secondary roads was

On farm to market roads.....31,292 Miles
On local secondary roads.....37,087 "
Total68,379 "

Thus the total mileage of surfaced secondary roads increased 16,183 miles from January 1, 1948 to January 1, 1954 or an average increase of 2,697 miles per year. In addition to this increase in the total mileage of surfaced secondary roads, a very considerable mileage of old, worn out, surfaced secondary road has been reconstructed, reggraded, rebridged, and resurfaced.

Condition of Farm to Market Road System.

The condition of the farm to market road system in each county is shown in Table on Pages 32 & 33. In 33 counties, only five miles, or less than five miles, of farm to market road remained unsurfaced on January 1, 1954. Only 2867 miles of the 34,159 miles of farm to market road system were unsurfaced on January 1, 1954. Many hundreds of miles of old surfaced farm to market roads need to be resurfaced.

See map Page 31

No Bonds Being Issued.

Iowa's highway work, both State and County, is now wholly on the "pay-as-you-go" plan. The primary road bonds issued during the period 1919 to 1938 have all been paid off. No new primary road bonds are being issued. County road bonds previously issued have nearly all been paid off. No new county road bonds are being issued except in emergency cases.

Unobligated Available Farm to Market Road Funds.

During the war, highway construction work was shut down by Government order. Any highway income for construction work accumulated. It could not be spent. On July 1, 1945, when the war was about over, the balance in the farm to market road fund was \$5,730,291. There were no outstanding contracts.

The farm to market road fund income each year since the war has been as follows:

During Fiscal	:	From	:	Federal	:	
Year Ended	:	State	:	Funds	:	Total
June 30	:	Sources	:	Allotted	:	Income
1945	:	\$ 855,429	:	\$ 3,979,710	:	\$ 4,835,139
1946	:	2,245,665	:	3,971,103	:	6,216,768
1947	:	5,292,651	:	3,870,336	:	9,162,987
1948	:	9,319,638	:	-	:	9,319,638
1949	:	12,211,889	:	3,516,275	:	15,728,164
1950	:	8,863,594	:	3,513,955	:	12,377,549
1951	:	10,660,404	:	3,947,519	:	14,607,923
1952	:	10,571,895	:	3,932,247	:	14,504,142
1953	:	10,533,451	:	4,325,000	:	14,858,451
1954	:	11,048,526	:	4,325,000	:	15,373,526

Chart on Page 30

The term "unobligated available farm to market road funds" includes and means (a) the cash balance in the farm to market road fund in the hands of the State, plus (b) the Federal Aid Secondary road funds allotted to the State of Iowa but not yet collected by the State from the Federal Government, and minus (c) the outstanding farm to market road contracts.

On June 30, 1954, the unobligated available farm to market road funds were as follows:

(a)	Cash balance in the hands of the State.....	\$8,220,735.00
(b)	Contracts outstanding.....	7,352,694.00
(c)	Surplus Cash.....	868,041.00
(d)	Federal secondary road aid allotted to Iowa but not collected.....	9,238,865.00
(e)	Unobligated available farm to market road funds on June 30, 1954.....	10,106,906.00

These Federal funds are not available "cash". These Federal funds are a credit which the State may collect from the Federal Government when and as the several Federal Aid Secondary road projects by which these Federal Secondary Road funds are obligated are completed, accepted, and paid for by the State and claims filed by the State against the Federal Government's

prorata share of the cost of such projects.

In like manner the unobligated available farm to market road funds on July 1 of each postwar year were,

July 1, 1945.....	\$5,730,291
July 1, 1946	13,184,856
July 1, 1947.....	17,554,785
July 1, 1948	18,039,540
July 1, 1949.....	23,560,797
July 1, 1950.....	19,579,408
July 1, 1951	11,431,078
July 1, 1952	5,994,776
July 1, 1953	6,952,672
July 1, 1954	10,106,907

The \$10,106,907 unobligated available farm to market road fund is about \$6,000,000 greater than it should be. It is almost impossible to reduce the Federal Aid funds available below one year's allotment. The total amount of farm to market obligations for any year is dependent upon the ninety-nine counties, because projects are initiated, surveys made, and plans drawn by the counties. If the preliminary work is not done, the Commission cannot let the contracts. Each year the Commission informs all counties of the funds available for the next year, and asks the counties to set up programs to use all available funds. Invariably the programs are set up to use all funds, but when the county does not furnish the preliminary data to place the project under contract, it affects the total fund.

See Chart I on Page 34

Since July 1, 1954, \$6,600,000 of additional funds have been authorized. The Commission and the counties will try to keep up this rate of progress, which we think we can. At this rate, \$19,800,000 additional farm to market funds will be obligated in this fiscal year, which will reduce the unobligated balance on June 30, 1955 to \$5,680,200.

Unobligated balance June 30, 1954.....\$10,106,700
 Estimated Income 7-1-54 to 6-30-55..... 15,373,500
 Less estimated obligations..... 19,800,000
 Estimated unobligated balance June 30,
 1955..... 5,680,000

Unobligated Available Primary Road Funds.

The primary road fund available each year since
 World War II has been as follows:

During	:	From	:	Federal	:	Total Primary
Fiscal Year	:	State	:	Funds	:	Road Fund
Ended June 30:	:	Sources	:	Allotted	:	Income
1945	:	\$17,000,000	:	\$7,159,367	:	\$24,159,367
1946	:	17,000,000	:	7,146,424	:	24,146,424
1947	:	17,000,000	:	7,056,421	:	24,056,421
1948	:	17,000,000	:	-	:	17,000,000
1949	:	17,000,000	:	6,331,438	:	23,331,438
1950	:	27,416,985	:	6,327,962	:	33,744,947
1951	:	29,700,767	:	6,846,806	:	36,547,573
1952	:	29,601,306	:	6,813,091	:	36,414,397
1953	:	29,463,168	:	6,813,091	:	36,276,259
1954	:	38,216,033	:	8,099,000	:	46,315,033

The term "unobligated available primary road funds" includes and means (a) the cash balance in the primary road fund in the hands of the State, plus (b) the Federal Aid Primary and Urban Road Funds allotted to the State of Iowa but not yet collected by the State from the Federal Government, and minus (c) the outstanding Primary and Urban road contracts.

On June 30, 1952 the unobligated available primary road funds were as follows:

(a) Cash balance in hands of State.....\$11,327,089
 (b) Contracts Outstanding..... 22,276,660
 (c) Cash balance June 30, 1954
 overobligated.....\$10,949,571
 (d) Federal aid Primary and Urban road
 aid allotted to Iowa but not
 collected..... 18,208,958
 (e) Available primary road funds
 overobligated on June 30, 1954.....\$ 7,259,387

These federal funds are not available "cash". They are not a "balance". These federal funds are a credit which the State may collect from the Federal Government when and as the several Federal Aid Primary and Urban road projects by which these Federal aid road funds are obligated, are completed, accepted, and paid for by the State, and claims filed by the State against the Federal Government's prorata share of the cost of these projects.

In like manner, unobligated primary road funds on June 30 of each postwar year were

June 30, 1945	\$22,741,014
June 30, 1946	23,346,121
June 30, 1947	21,419,273
June 30, 1948	11,071,008
June 30, 1949	10,871,234
June 30, 1950	12,158,715
June 30, 1951	7,938,000
June 30, 1952 (Overobligated)...	1,761,000
June 30, 1953	8,196,318
June 30, 1954	7,259,387

The unobligated available primary road funds have been reduced from \$23,346,121 on June 30, 1946, to \$7,259,387 on June 30, 1954. That is a total reduction of \$16,086,734 in the past eight years.

(See Page 35)

Thus the early postwar accumulation of unobligated available primary road funds has been largely obligated and used up.

Miscellaneous Obligations Against Primary Road Fund.

Against this estimated annual primary road fund income (\$46,315,000) there are several annual obligations, which are estimated as follows:

Maintenance of Primary Roads.....	\$9,460,000
Engineering and Administration	2,250,000
Inspection	2,100,000
Weighing of Traffic	250,000
Right of Way	2,000,000
Buildings and Grounds	350,000
Highway Planning Survey	360,000
Workmen's Compensation	40,000
Highway Research	70,000
Litigation	15,000
Total	\$16,895,000

Annual Primary Road Fund Available for Construction

The estimated primary road fund income available per year for construction is \$29,420,000 as follows:

Total estimated primary road fund
income per year.....\$46,315,000

Estimated miscellaneous expenditures
per year\$16,895,000

Estimated primary road fund income
per year available for construction \$29,420,000

Outstanding Highway Contracts Exceed Available Cash.

The statement has been made that "the highway income under laws passed by the 53rd General Assembly is piling up"; that "the highway income is not being used up".

Such statements are untrue as evidenced by the following:

a. Primary Road Funds

Primary road fund contracts outstanding
September 30, 1954.....\$17,834,641

Cash in primary road fund
September 30, 1954 8,699,913

Excess of contracts over cash.....\$ 9,134,728

b. Farm to Market Road Funds.

Farm to market road fund contracts
outstanding September 30, 1954....., 11,748,698

Cash balance in farm to market road
fund September 30, 1954,..... 7,201,846

Excess of contracts over cash..... \$ 4,546,852

Cost of Maintaining Primary and Secondary Roads.

Maintenance is one of the principal items of
expense incident to a modern highway system.

Primary Roads.

Maintenance of the primary road system and extensions
of primary roads in cities and towns, cost

In fiscal year 1949.....	\$6,903,671
In fiscal year 1950.....	7,413,088
In fiscal year 1951.....	8,090,728
In fiscal year 1952	8,812,507
In fiscal year 1953.....	9,953,220
In fiscal year 1954.....	8,852,284

The 1954 primary road maintenance was at the average
rate of \$910 per mile for the 9,730 miles of primary
roads and their municipal extensions maintained.

Secondary Roads

Maintenance of the secondary road system cost

In the calendar year 1948.....	\$23,464,710
In the calendar year 1949.....	24,290,752
In the calendar year 1950.....	29,115,601
In the calendar year 1951.....	30,715,591
In the calendar year 1952.....	36,725,918
In the calendar year 1953.....	36,534,947

The 1953 secondary road maintenance was at the average rate of \$394 per mile for the 92,778 miles of secondary road. About 16,000 miles of secondary road carry less than ten vehicles per day. An additional 29,000 miles of secondary road carry ten to twenty-four vehicles per day. The maintenance work done on these 45,000 miles of light traffic secondary roads is quite light. Since the remaining 47,954 miles of secondary road carry the bulk of secondary road traffic, the bulk of secondary road maintenance is done on these roads.

Secondary Road Department.

There is more demand each day for a dustless surface for the secondary roads. Most of this demand is for bituminous surfacing, but in a few instances pavement is requested. Bituminous roads are not cheap. A squirt of road oil will not do the job. Bituminous surfaces will cost from \$18,000 to \$30,000 per mile, depending on the location. Some counties can afford them; some cannot. While the bituminous road cannot be built cheaply, there is no reason why it cannot be built economically. To this end the Commission has directed its staff to give full cooperation to the secondary road officials of Iowa in the design and construction of low type pavements by the use of local materials such as selected soil, sand, shale, gravel, and crushed stone. It is the duty of the Secondary Road Department to see to it that a program proceeds without delay and to

act as a liaison agent between the county officials and all departments of the Highway Commission. (See Pages. 36,37,38 for a full discussion of flexible base pavements (low cost pavements).

Population and Highway Income in Iowa and the seven Neighboring States.

See page 40

Toll Roads.

We are including with this discussion a copy of our report to Governor Beardsley stating our findings and conclusions regarding the feasibility of a toll road. This report is not complete without the reports of Coverdale and Colpitts and Howard, Needles, Tammen and Bergendoff, consulting engineers, because the Highway Commission report refers to the two engineering reports. However, we feel sure this report will give a general understanding of the toll road problem.

October 13, 1954

To - County Auditors

From - State Highway Commission

Subject - Allocation Among the Counties of Equalization Farm to Market Road Fund Income for the Fiscal Year July 1, 1953 to June 30, 1954.

In conformance with Subsection 3 of Section 5, Chapter 308-A, Code 1950, we transmit this statement of the receipts in the equalization farm to market road fund during the fiscal year July 1, 1953 to June 30, 1954, and the allocation of said funds among the counties.

I. Receipts.

The receipts in the equalization farm to market road fund during the fiscal year July 1, 1953 to June 30, 1954, were

From July 1 to December 31, 1953.....	\$2,087,977.57
From January 1 to June 30, 1954	2,261,355.62
Total Receipts for Whole Year	\$4,349,333.19

II. Counties Not Eligible to Receive Equalization Farm to Market Road Funds on an Equalization Basis.

The following seventeen counties were found to have failed to levy sufficient millage tax for secondary roads in 1953, payable in 1954, to qualify under Section 310.9, Code 1950, to receive equalization farm to market road funds on an equalization basis in 1954:

Black Hawk	Grundy	Palo Alto	Tama
Buena Vista	Hamilton	Pocahontas	Wright
Delaware	Hancock	Sac	
Emmet	Humboldt	Sioux	
Greene	Lyon	Story	

These counties were, therefore, found ineligible in 1954 to receive equalization farm to market road funds on an equalization basis.

III. Reserve for Emergency and Special Case Allotments.

The following amounts of the equalization farm to market road fund income during the fiscal year July 1, 1953 to June 30, 1954 were reserved for emergency and special case allotments:

Income	: Total Amount of		: Reserve for		: Net Income	
	: Equalization		: Emergency and		: Allotted	
	: Farm to Market		: Special Case		: to	
	: Road Fund Income:		: Allotments		: Counties	
7 1-53 to	:					
12-31-53	:	\$2,087,977.57	:	None	:	\$ 2,087,977.57
1-1-54 to	:					
6-30-54	:	2,261,355.62	:	\$ 134,601.62	:	\$ 2,126,754.00
	:	\$4,349,333.19	:	\$ 134,601.62	:	\$ 4,214,731.57

The equalization farm to market road funds reserved for emergency and special case allotments consist of \$71,001.00 which would have been allotted to the seventeen ineligible counties if such counties had been eligible to receive such funds. In addition, these funds include \$63,600.62 which would have been allotted to Boone, Clay, Clinton, Dickinson, Johnson, Kossuth, O'Brien and Plymouth Counties if said funds had been needed in said counties.

IV. Allotment of Net Income to Counties.

The \$2,087,977.57 of net equalization farm to market road fund income for the six-month period July 1 to December 31, 1953 was allotted among 76 eligible counties on March 10, 1954, as shown in Column 2 of the attached Table No. 1. The \$2,261,355.62 of equalization farm to market road fund income for the six-month period January 1 to June 30, 1954 was allotted among 74 eligible counties on September 7, 1954 as shown in Column 3 of the attached

Table No. 1.

V. Allocation of Funds Reserved for Emergency and Special Case Allotments.

There was no emergency or special case allotment of equalization farm to market road funds to any county during the fiscal year July 1, 1953 to June 30, 1954.

VI. Condition of Reserve Fund for Emergency and Special Case Allotments.

The condition of the equalization farm to market road fund reserved for emergency and special case allotment is, on this date, as follows:

Balance July 1, 1953	\$354,167.75
Receipts from transfer of equalization farm to market road fund.	
March 10, 1954	134,601.62
Total	\$ 488,769.37

Allocations (Aug. 10, 1954)

Clay County	\$ 16,300.00
Dickinson County	17,300.00
O'Brien County	77,600.00
Osceola County	24,700.00
Plymouth County	68,900.00
	<u>\$204,800.00</u>
Balance	\$283,969.37
	<u>\$488,769.37</u>

Table No. 1.

Distribution of Equalization Farm to
Market Road Fund for the Fiscal Year Ending
June 30, 1954.

	Net Income	Net Income	Total Net Income
	July 1, 1953 to	Jan. 1, 1954	July 1, 1953 to
	Dec. 31, 1953 -	to June 30, 1954	June 30, 1954.
	Allotted March 10,	Allotted	
	1954.	Sept. 7, 1954.	
County	\$2,087,977.57	\$2,261,355.62	\$4,349,333.19
Adair	\$ 38,187.00	\$ 38,952.00	77,139.00
Adams	31,923.00	32,564.00	64,487.00
Allamakee	65,510.00	66,823.00	132,333.00
Appanoose	66,120.00	67,445.00	133,565.00
Audubon	28,267.00	28,832.00	57,099.00
Benton	7,759.00	7,915.00	15,674.00
Black Hawk	-	-	-
Bocne	278.00	-	278.00
Bremer	8,701.00	8,876.00	17,577.00
Buchanan	22,446.00	22,896.00	45,342.00
Buena Vista	-	-	-
Butler	22,114.00	22,557.00	44,671.00
Calhoun	666.00	678.00	1,344.00
Carroll	2,050.00	2,092.00	4,142.00
Cass	41,179.00	42,005.00	83,184.00
Cedar	12,636.00	12,890.00	25,526.00
Cerro Gordo	56.00	57.00	113.00
Cherokee	2,439.00	2,487.00	4,926.00
Chickasaw	21,450.00	21,879.00	43,329.00
Clarke	44,338.00	45,227.00	89,565.00
Clay	-	-	-
Clayton	42,123.00	42,966.00	85,089.00
Clinton	-	-	-
Crawford	22,945.00	23,405.00	46,350.00
Dallas	1,773.00	1,809.00	3,582.00
Davis	66,009.00	67,332.00	133,341.00
Decatur	66,786.00	68,123.00	134,909.00
Delaware	-	-	-
Des Moines	16,904.00	17,243.00	34,147.00
Dickinson	-	-	-
Dubuque	16,794.00	17,129.00	33,923.00
Emmet	-	-	-
Fayette	22,114.00	22,557.00	44,671.00
Floyd	20,506.00	20,918.00	41,424.00
Franklin	111.00	113.00	224.00
Fremont	29,873.00	30,472.00	60,345.00
Greene	-	-	-
Grundy	-	-	-
Guthrie	38,964.00	39,743.00	78,707.00
Hamilton	-	-	-
Hancock	-	-	-
Hardin	1,940.00	1,979.00	3,919.00
Harrison	70,166.00	71,572.00	141,738.00

	: Net Income	: Net Income	: Total Net Income
	: July 1, 1953 to	: Jan. 1, 1954	: July 1, 1953 to
	: Dec. 31, 1953 -	: to June 30, 1954	: June 30, 1954.
	: Allotted March 10,	: Allotted	
	: 1954.	: Sept. 7, 1954.	
County	: \$2,087,977.57	: \$2,261,355.62	: \$4,349,333.19
Henry	: 17,625.00	: 17,978.00	: 35,603.00
Howard	: 24,221.00	: 24,705.00	: 48,926.00
Humboldt	: -	: -	: -
Ida	: 6,540.00	: 6,671.00	: 13,211.00
Iowa	: 21,892.00	: 22,331.00	: 44,223.00
Jackson	: 52,820.00	: 53,877.00	: 106,697.00
Jasper	: 27,657.00	: 28,210.00	: 55,867.00
Jefferson	: 27,933.00	: 28,493.00	: 56,426.00
Johnson	: -	: -	: -
Jones	: 13,467.00	: 13,738.00	: 27,205.00
Keokuk	: 28,100.00	: 28,663.00	: 56,763.00
Kossuth	: -	: -	: -
Lee	: 24,884.00	: 25,384.00	: 50,268.00
Linn	: 10,475.00	: 10,685.00	: 21,160.00
Louisa	: 22,502.00	: 22,953.00	: 45,455.00
Lucas	: 44,562.00	: 45,453.00	: 90,015.00
Lyon	: -	: -	: -
Madison	: 36,579.00	: 37,312.00	: 73,891.00
Mahaska	: 26,659.00	: 27,193.00	: 53,852.00
Marion	: 24,053.00	: 24,536.00	: 48,589.00
Marshall	: 998.00	: 1,018.00	: 2,016.00
Mills	: 23,444.00	: 23,914.00	: 47,358.00
Mitchell	: 16,904.00	: 17,243.00	: 34,147.00
Monona	: 49,550.00	: 50,541.00	: 100,091.00
Monroe	: 44,562.00	: 45,453.00	: 90,015.00
Montgomery	: 23,832.00	: 24,310.00	: 48,142.00
Muscatine	: 11,473.00	: 11,703.00	: 23,176.00
O'Brien	: 2,716.00	: -	: 2,716.00
Osceola	: 1,829.00	: 1,866.00	: 3,695.00
Page	: 44,395.00	: 45,284.00	: 89,679.00
Palo Alto	: -	: -	: -
Plymouth	: -	: -	: -
Pocahontas	: -	: -	: -
Polk	: 942.00	: 961.00	: 1,903.00
Pottawattamie	: 87,570.00	: 89,324.00	: 176,894.00
Poweshiek	: 23,500.00	: 23,970.00	: 47,470.00
Ringgold	: 66,508.00	: 67,841.00	: 134,349.00
Sac	: -	: -	: -
Scott	: 11,805.00	: 12,042.00	: 23,847.00
Shelby	: 60,301.00	: 61,509.00	: 121,810.00
Sioux	: -	: -	: -
Story	: -	: -	: -
Tama	: -	: -	: -
Taylor	: 41,346.00	: 42,174.00	: 83,520.00
Union	: 34,861.00	: 35,560.00	: 70,421.00

	:Net Income	:Net Income	:
	:July 1, 1953 to	:Jan. 1, 1954	:Total Net Income
	:Dec. 31, 1953 -	:to June 30, 1954:	:July 1, 1953 to
County	:Allotted March 10,	:Allotted Sept. 7:	:June 30, 1954.
	:1954	:1954.	:
	:\$2,087,977.57	:\$2,261,355.62	:\$4,349,333.19
Van Buren	: 54,482.00	: 55,573.00	: 110,055.00
Wapello	: 30,927.00	: 31,546.00	: 62,473.00
Warren	: 36,801.00	: 37,539.00	: 74,340.00
Washington	: 26,327.00	: 26,854.00	: 53,181.00
Wayne	: 66,840.00	: 68,180.00	: 135,020.00
Webster	: 610.57	: 622.00	: 1,232.57
Winnebago	: 10,530.00	: 10,741.00	: 21,271.00
Winneshiek	: 43,453.00	: 44,323.00	: 87,776.00
Woodbury	: 16,737.00	: 17,073.00	: 33,810.00
Worth	: 11,638.00	: 11,872.00	: 23,510.00
Wright	: -	: -	: -
Total	:\$2,087,977.57	:\$2,126,754.00	:\$4,214,731.57



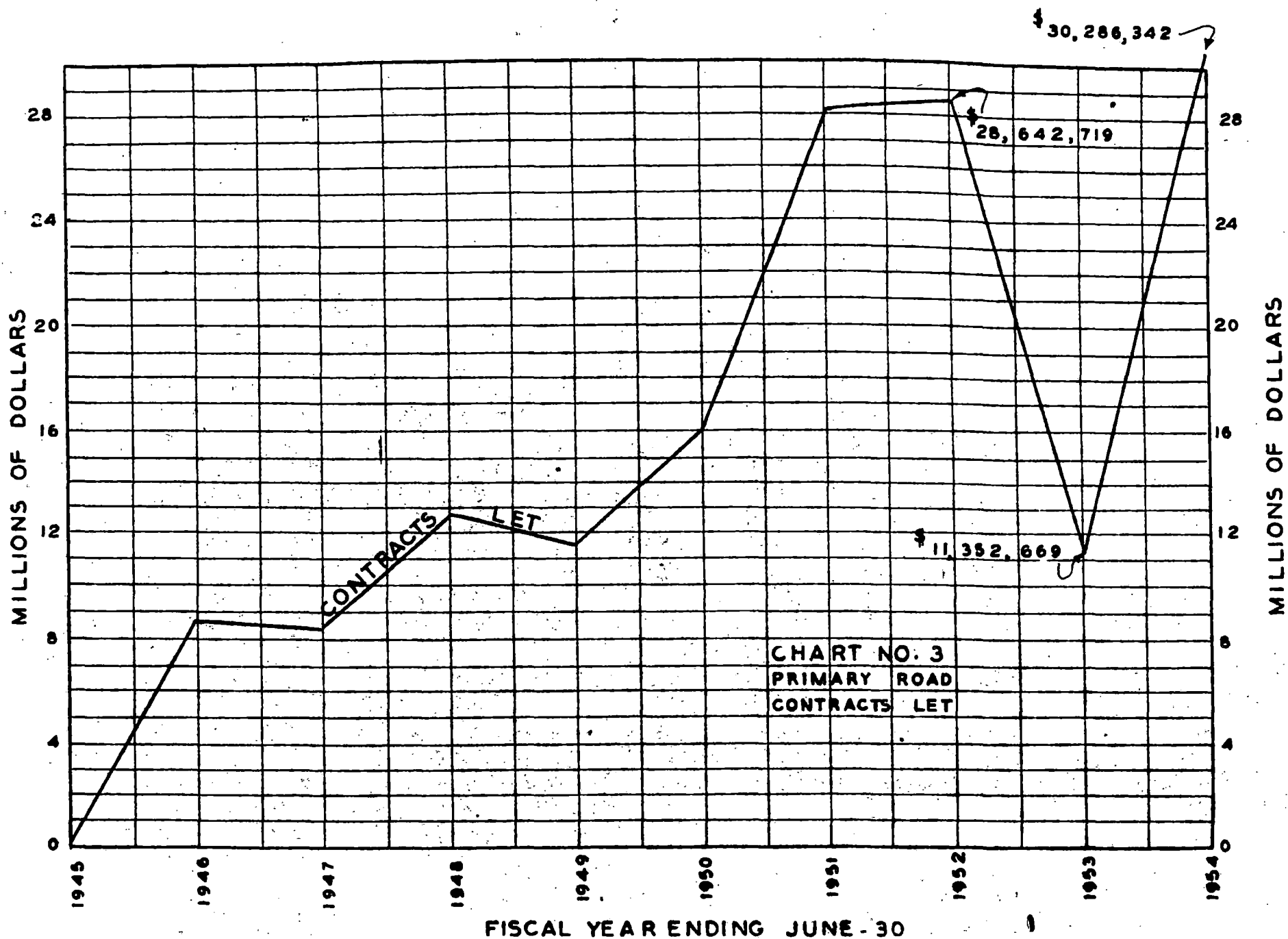
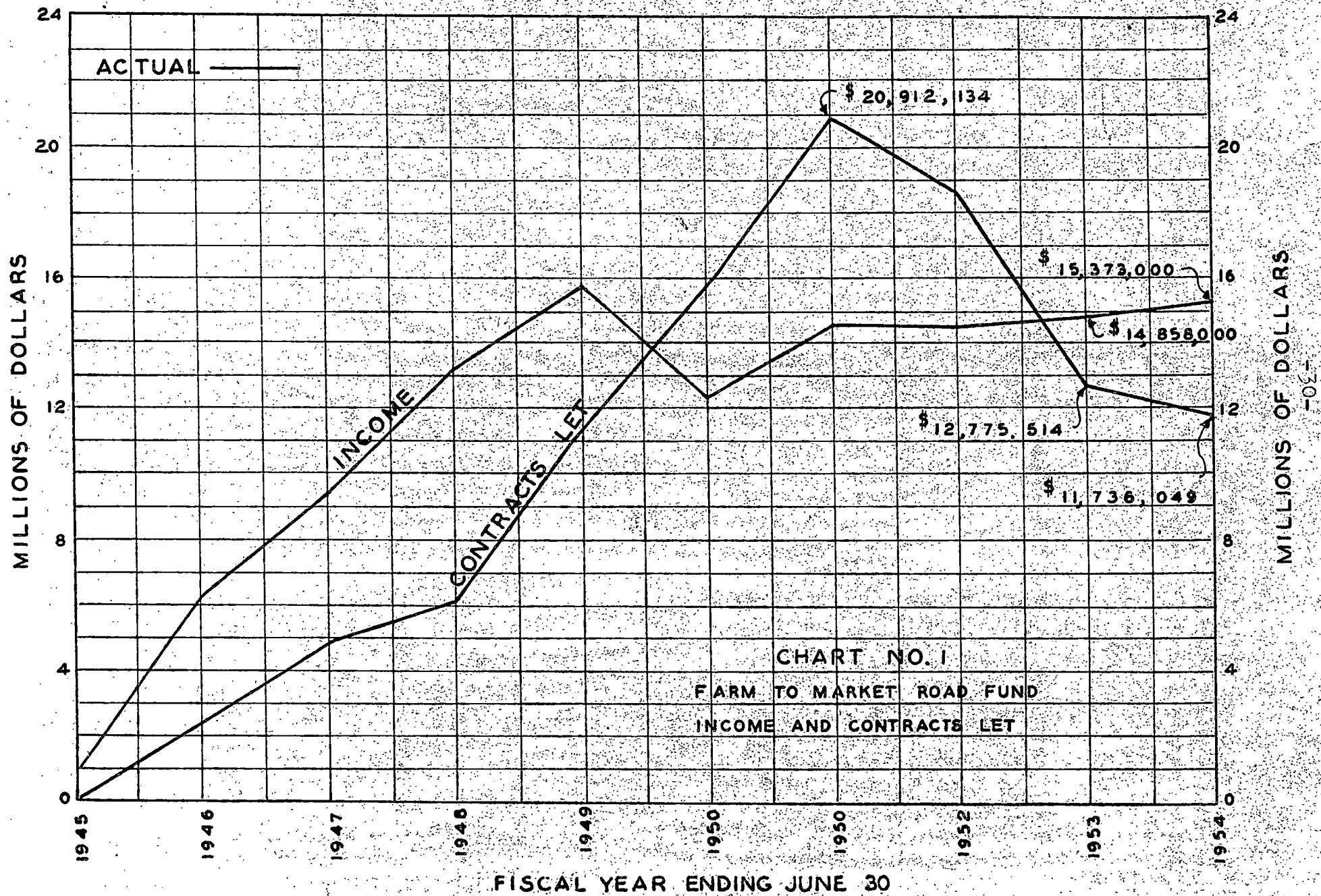
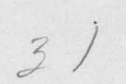


CHART NO. 3
PRIMARY ROAD
CONTRACTS LET



JANUARY 1, 1954



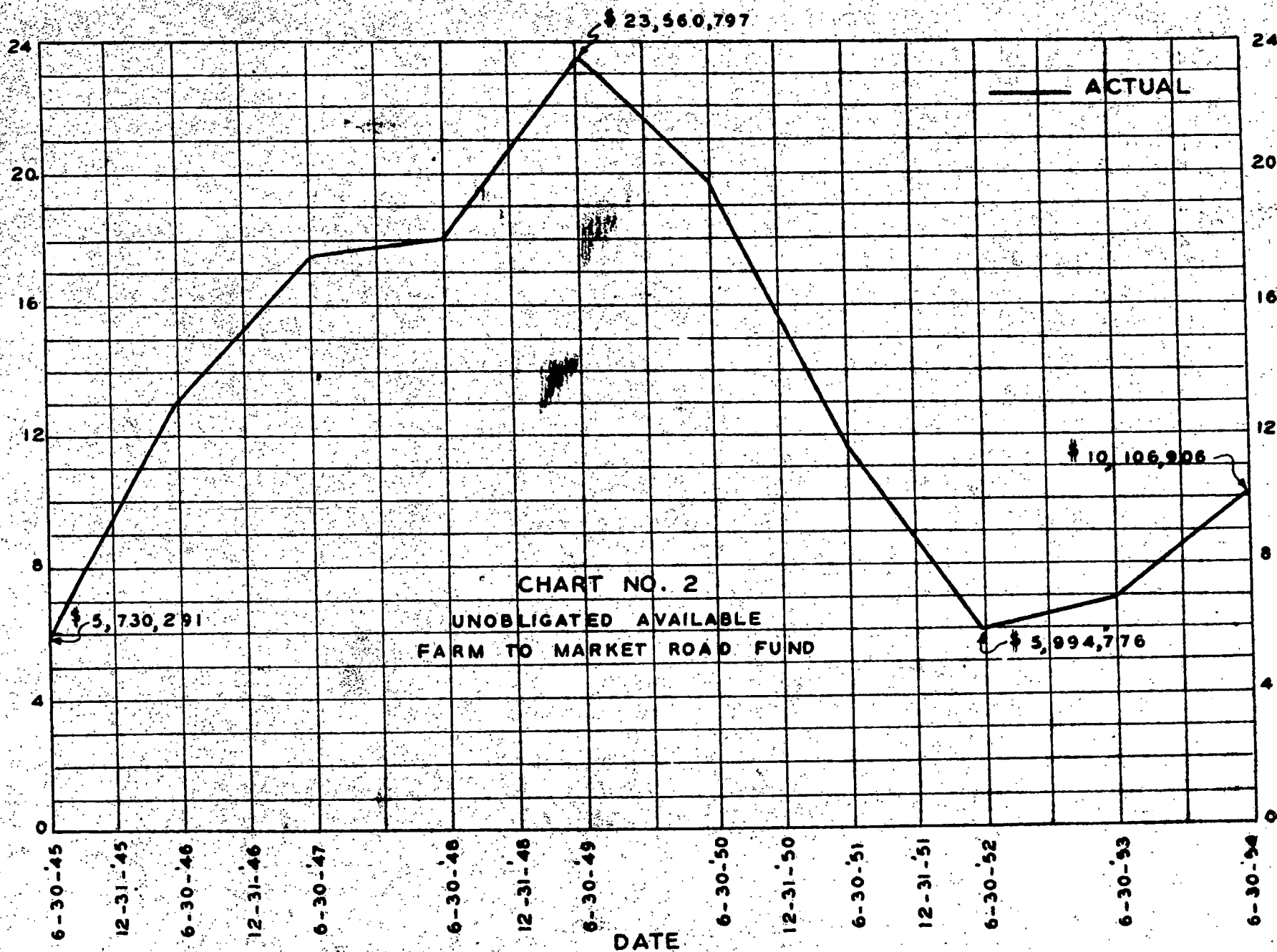
STATE OF IOWA

-3-
Condition of Farm to Market Road System
January 1, 1954.

County	Miles of Farm to Market Road		
	Unsurfaced Miles	Surfaced Miles	Total Miles
(1)	(2)	(3)	(4)
Adair	11.64	323.30	334.94
Adams	72.36	187.84	260.20
Allamakee	5.00	376.73	381.73
Appanoose	31.32	279.09	310.41
Audubon	65.58	218.36	283.94
Benton	20.15	410.41	430.56
Black Hawk	7.61	346.24	353.85
Boone	1.70	368.09	369.79
Bremer	9.71	283.86	293.57
Buchanan	98.24	272.14	370.38
Buena Vista	4.90	356.97	361.87
Butler	25.05	337.49	362.54
Calhoun	4.09	354.21	358.30
Carroll	3.25	366.73	369.98
Cass	115.61	222.85	338.46
Cedar	5.07	349.42	354.49
Cerro Gordo	.25	358.81	359.06
Cherokee	4.10	331.08	335.18
Chickasaw	24.30	288.48	312.78
Clarke	36.96	198.33	235.29
Clay	3.01	324.68	327.69
Clayton	46.82	429.03	475.85
Clinton	16.81	411.62	428.43
Crawford	123.83	319.91	443.74
Dallas	3.03	362.50	365.53
Davis	12.31	285.60	297.91
Decatur	61.54	243.98	305.52
Delaware	15.43	341.55	356.98
Des Moines	17.37	233.23	250.60
Dickinson	3.39	238.88	242.27
Dubuque	6.46	352.90	359.36
Emmet	.40	241.41	241.81
Fayette	16.60	448.04	464.64
Floyd	3.20	297.56	300.76
Franklin	1.37	340.52	341.89
Fremont	35.62	254.75	290.37
Greene	-	339.20	339.20
Grundy	-	311.93	311.93
Guthrie	70.33	299.41	369.74
Hamilton	2.50	346.55	349.05
Hancock	1.40	342.85	344.25
Hardin	4.00	359.50	363.50
Harrison	172.39	255.70	428.09
Henry	9.95	265.91	275.86
Howard	1.00	279.20	280.20
Humboldt	-	250.86	250.86
Ida	15.99	255.24	271.23
Iowa	19.15	337.03	356.18
Jackson	99.62	260.07	359.69

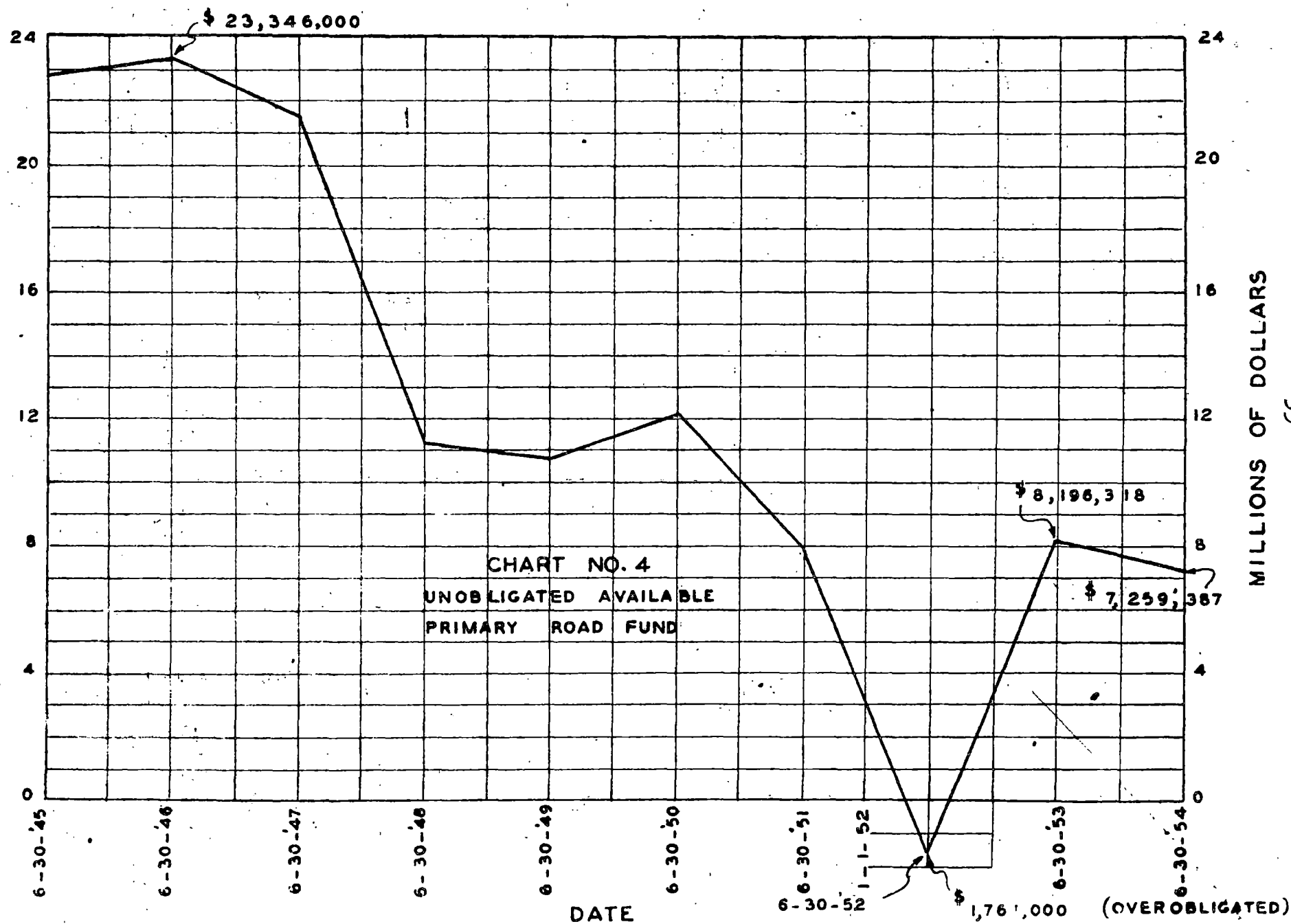
(1)	(2)	(3)	(4)
Jasper	18.79	453.00	471.79
Jefferson	27.97	232.80	260.77
Johnson	27.53	359.79	387.32
Jones	12.33	344.44	356.77
Keokuk	87.62	285.31	372.93
Kossuth	27.93	539.17	567.10
Lee	7.78	307.24	315.02
Linn	27.25	426.53	453.78
Louisa	3.39	234.95	238.34
Lucas	28.26	231.33	259.59
Lyon	.65	343.55	344.20
Madison	23.43	309.55	332.98
Mahaska	8.49	360.30	368.79
Marion	20.18	356.29	376.47
Marshall	2.53	353.37	355.90
Mills	31.65	221.71	253.36
Mitchell	2.75	279.64	282.39
Monona	113.83	266.88	380.71
Monroe	35.27	213.18	248.45
Montgomery	28.79	247.10	275.89
Muscatine	18.53	266.96	285.49
O'Brien	11.46	352.38	363.84
Osceola	6.60	240.74	247.34
Page	134.13	217.92	352.05
Palo Alto	1.15	336.61	337.76
Plymouth	1.00	491.53	492.53
Pocahontas	2.00	349.74	351.74
Polk	2.53	366.11	368.64
Pottawattamie	124.76	454.94	579.70
Poweshiek	48.62	305.39	354.01
Ringgold	51.75	250.45	301.70
Sac	5.27	357.63	362.90
Scott	25.93	285.92	311.85
Shelby	262.29	96.10	358.39
Sioux	2.69	505.59	508.28
Story	1.50	366.50	368.00
Tama	36.43	409.73	446.16
Taylor	121.98	203.32	325.30
Union	31.09	207.62	238.71
Van Buren	23.61	249.47	273.08
Wapello	20.29	263.50	288.79
Warren	7.39	344.07	351.46
Washington	20.66	295.87	316.53
Wayne	29.04	276.47	305.51
Webster	4.50	417.91	422.41
Winnebago	5.57	259.66	265.23
Winneshiek	5.46	421.17	426.63
Woodbury	12.66	478.49	491.15
Worth	1.50	247.46	248.96
Wright	.48	346.13	346.61
Total	2867.20	31,291.55	34,158.75

MILLIONS OF DOLLARS



MILLIONS OF DOLLARS

MILLIONS OF DOLLARS



BRIEF HISTORICAL ACCOUNT OF DESIGN, DEVELOPMENT AND CONSTRUCTION OF BITUMINOUS SURFACES AND FLEXIBLE BASES

Introduction.

During the period 1929-1933, the prevailing types of bituminous construction in adjoining states were either "blotter type" surfaces or cold-mix mats placed on the existing graveled surfaces. Similar types of construction were initiated in Iowa in 1931.

Adequate foundations on which to place bituminous surfaces were considered to exist if the graveled roadbeds were satisfactorily carrying loads during a major part of the calendar year. It was assumed that bituminous surfaces would further improve the traveled way by sealing the road as protection from rainfall, thus assuring stable, mudless and dustless surfaces.

However, nature soon demonstrated that a sealed surface did not assure stability. Capillary moisture was impounded below the sealed surface and was dissipated very slowly by evaporation. Roadbeds which, prior to treatment were reasonably stable, often failed extensively after a bituminous surface had been in place from one to two years. Failures were predominant during the early spring months and the cause was attributed to an accumulation of impounded moisture beneath the sealed surface. It soon became apparent that some change in prevailing practice was imperative or excessive maintenance costs for an ever increasing mileage of highways would seriously jeopardize construction funds in ensuing years.

Development of Foundations.

A. Flexible Bases.

Definition of base - specified or selected material of planned thickness placed as foundation for a pavement.

Progressive steps in methods used to correct inadequate foundations may be generally classed as "trial and error". The first step was to strengthen the outer edges of the traveled way by placing additional aggregate in trenches tapering from the existing surface on the inner edge to variable depths up to six inches at the outer extremity of the trench. Such corrective measures were inadequate and were soon discontinued,

The use of stabilized bases was initiated in 1934 and their development has continued through the years, progressively increasing in normal thickness from three to eight inches and during the 1954 season the thickness, including surface course, has increased to nine, ten and eleven inches quite generally.

It is noteworthy of mention that the "trial and error" method was augmented in 1938 with an experimental project several miles in length. The project was constructed in sections one mile or more in length with some variable in each section. The normal base thickness was five inches, and except for two soil-aggregate base sections the existing subgrade soil and gravel surface were used as base material. The predominant type of base was "bituminous treated soil" but two sections each of soil-aggregate and soil-cement were included. Tars, MC's, SC's and emulsions of various grades were used in various sections of bituminous treated soil. A heavy surface treatment was used as the wearing course for the project.

Much informative data resulted from the experiment and, although substantiated by later work, the conclusion that bituminous treated soil bases are not applicable to Iowa soils and climate originated with this experiment.

Until recent years, the predominant base types were soil-aggregate and rolled stone with an occasional soil-cement and bituminous treated soil and one burned mine shale base. During 1954 the basic types include rolled stone, bituminous treated aggregate and bituminous concrete, with rolled stone and bituminous treated aggregate lower course and bituminous concrete upper course predominating. Occasional types include crushed stone and soil-cement.

B. Subbases.

Definition of subbase - specified or selected material of planned thickness placed as a foundation for a base.

During 1954 subbases have become a reality. Two types, soil-aggregate and granular, are currently in use.

The soil-aggregate type utilizes the subgrade soil and existing granular surface as the principal base ingredients, with additional granular material added as necessary to compensate for a deficiency in subgrade soil stability. The normal thickness for subbases of this type has been currently established as six inches.

The granular type of subbase may be sand, pit run gravel, agricultural lime or other suitable granular material locally available at relatively low cost. Granular subbases are placed on the existing roadbed. The quantity of material provided in contract documents is greater than that required for the normal subbase thickness as a provision to correct road crown and profile variables. The normal design thickness varies according to the type of base specified and during the current year design thicknesses of four, five and six inches have been used.

The principal function of the soil-aggregate subbase is to assure a foundation of relatively uniform stability for the superimposed base. The granular subbase is considered to furnish not only a foundation of uniform stability but also some equivalent of additional base thickness.

C. Subgrade.

Since the term "subgrade" has been used herein, it may be well for the purpose of clarity to define the term, hence:

Definition of subgrade - basement soil. The material in excavations, embankments and embankment foundations immediately below the first layer of subbase, base or pavement. Soil naturally in place.

Development of Bituminous Surfaces.

Until recently, surface treatments of the inverted penetration type have predominated as the wearing course for flexible bases. Recently, surface treatments are being supplanted by cold-mix and hot-mix mats. In 1952, one project with rolled stone base was surfaced with a three-inch hot-mix high type binder and surface course. In 1954, two other rolled stone bases are being surfaced in a like manner. Several projects are designed for dense graded, cold-mix mat surface courses, but in several instances permission has been granted the contractor to place them as hot-mixes using a finishing machine. In such instances aggregates are required to meet the cold-mix gradation and plant, methods and procedures comply with modified hot-mix methods. An important item in the modified method is that a gradation control unit is not required. In a few instances light surface treatments are being placed as the wearing course on bituminous concrete bases, and in one or two instances the asphalt content in the upper course of the bituminous concrete base, placed as hot-mix, has been increased to serve as the wearing course. Only one project has been designed with a surface treatment as the wearing course on an untreated base.

General.

The important part that soils with their variable characteristics have in highway design was recognized in 1936 with the appointment of a soils engineer for our organization. A soil survey is now made for each contemplated grading project, and plans include the placement of selected or special materials to replace existing soils of undesirable characteristics. The study of soils is continued as justified until an all-weather surface has been placed.

During the current season, flexible bases with bituminous surfaces have been placed under contract for more than 200 miles of the primary road system.

Conclusion.

Measured in terms of years, it is granted that development in the field of flexible bases and bituminous surfaces has been slow, but present advancement suggests a promise of durability and serviceability for the future.

POPULATION AND INCOME IN 1954 FOR HIGHWAY CONSTRUCTION,
MAINTENANCE, OPERATION IN IOWA AND SEVEN NEIGHBORING STATES

ESTIMATED INCOME IN 1954 FOR HIGHWAY AND STREET
CONSTRUCTION, MAINTENANCE AND OPERATION

State	Population	:State Highways: :and Extensions: :of State High- :ways in Cities: :and Towns	Secondary :Roads	:Municipal Roads : :& Streets other : :than State High- :way Ext. in : :Cities & Towns :	Grand Total All Public Roads And Streets
Illinois	: 8,712,176	: \$121,484,000	: \$88,491,000	: \$73,465,000	: \$283,440,000
Missouri	: 3,954,653	: 85,308,000	: 21,000,000	: 20,000,000	: 126,308,000
Minnesota	: 2,982,483	: 65,000,000	: 47,000,000	: 27,000,000	: 139,000,000
Iowa	: 2,621,073	: 46,345,000	: 67,875,000	: 14,713,000	: 128,933,000
Kansas	: 1,905,299	: 44,784,000	: 39,767,000	: 19,464,000	: 104,015,000
Wisconsin	: 3,434,575	: 43,989,000	: 49,452,000	: 24,299,000	: 117,740,000
Nebraska	: 1,325,510	: 24,430,000	: 23,000,000	: 10,000,000	: 57,430,000
South Dakota	: 1,652,740	: 22,407,000	: 15,640,000	: 2,470,000	: 40,517,000

	Rank	PER CAPITA			
South Dakota	: 34.33 (1)	: 23.96 (2)	: 3.78 (8)	:	62.07 (1)
Kansas	: 23.50 (2)	: 20.87 (3)	: 10.22 (1)	:	54.59 (2)
Minnesota	: 21.79 (3)	: 15.76 (5)	: 9.05 (2)	:	46.61 (4)
Missouri	: 21.57 (4)	: 5.31 (8)	: 5.06 (7)	:	31.94 (8)
Nebraska	: 18.43 (5)	: 17.35 (4)	: 7.54 (4)	:	43.33 (5)
Iowa	: 17.68 (6)	: 25.90 (1)	: 5.61 (6)	:	49.19 (3)
Illinois	: 13.94 (7)	: 10.16 (7)	: 8.43 (3)	:	32.53 (7)
Wisconsin	: 12.80 (8)	: 14.40 (6)	: 7.07 (5)	:	34.28 (6)

Note: The above data with respect to highway and street income in each state in 1954 was furnished by the State Highway Department of that state.

POPULATION, LAND AREA, TOTAL RURAL MILEAGE,
POPULATION PER MILE OF RURAL HIGHWAY, MILES OF RURAL HIGHWAY
PER SQUARE MILES FOR IOWA AND SEVEN ADJOINING STATES

State	Population	Land Area: Square Miles	Total Rural Mileage	Population: Per Mile of Rural Highway	Miles of Rural Highway Per Square Mile land	Total Area Square Miles	Miles of Rural Highway per Square Miles of Total Area
Illinois	: 8,712,176	: 55,935	: 102,469	: 85	: 1.83	: 56,400	: 1.81
Iowa	: 2,621,073	: 56,045	: 100,916	: 26	: 1.8	: 56,290	: 1.79
Kansas	: 1,905,299	: 82,108	: 125,825	: 15	: 1.53	: 82,276	: 1.52
Minnesota	: 2,982,483	: 80,009	: 109,256	: 27	: 1.36	: 84,068	: 1.29
Missouri	: 3,954,653	: 69,226	: 99,411	: 40	: 1.43	: 69,674	: 1.42
Nebraska	: 1,325,510	: 76,663	: 99,901	: 13	: 1.30	: 77,227	: 1.29
South Dakota	: 652,740	: 76,536	: 91,664	: 7	: 1.19	: 77,047	: 1.18
Wisconsin	: 3,434,575	: 54,705	: 86,622	: 40	: 1.58	: 56,154	: 1.54

Note: Mileage figures from "Highway Statistics, 1952", by U.S. Department of Commerce, Bureau of Public Roads. Rural mileage listed includes rural roads under state control, under local control and under Federal control